

NUMERICALLY CONTROLLED METHOD
NUMERICAL CONTROL METHOD
INCLUDING INSERTING TIME VARIABLE INTO SPATIAL POLYNOMIAL
FOR CONTROLLING OBJECT MOTION

Abstract

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In a numerically controlled method of moving A numerical control positions an object to be controlled along a predetermined locus, ~~controlling control axes, the locus is made approximate to~~ or path, for example a laser machining head that is to shape a workpiece according to the locus. The locus is first approximated by a spatial polynomial, ~~a.~~ The polynomial is converted into a polynomial as time function, the polynomial converted ~~as~~ with a time variable by inserting a time function. The motion thus defined is distributed to each control axis, ~~a~~ control command ~~in~~ for each control axis is produced on the basis of being derived from the polynomial distributed to each axis as time function, and applied to control movement of the object to be controlled is moved along the locus, ~~controlling each control axis on the basis of the control command. The~~ nominal velocity, the acceleration and the jerk of needed to control the object to be controlled can be easily are obtained concerning each and applied as inputs to the control axis in advance by differentiating the polynomial expressed by time function. The object to be controlled is controlled so as to move along the locus expressed by the polynomial, feeding irregularity or position shift is reduced and curved face machining at high accuracy is possible axes by differentiating the time polynomial. Accuracy is improved by tracking the polynomial rather than responding in the present time to displacement errors sensed during earlier times.

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